

OCTOBER, 1959



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**ADVERTISING REPRESENTATIVE:**

BEATRICE TOUZEAU,  
96 Collins St., Melbourne, C.I.  
Telephone: MF 4505.

**PRINTERS:**

"RICHMOND CHRONICLE,"  
Shakespeare St., Richmond, E.I.  
Telephone: JB 2419.

MSS. and Magazine Correspondence  
should be forwarded to the Editor,  
P.O. BOX 38,  
EAST MELBOURNE, C.2, VIC.,  
on or before the 5th of each month.

Subscription rate in Australia is  
18/- per annum, in advance (post  
paid) and A&I 1/- in all other  
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Postal Address: P.O. Box 36, East Melbourne, C.2, Vic.

**EDITORIAL****HISTORY**

HOW many of us in our school  
days have thought or said:  
"What a dry old subject is History",  
little realising at the time or appre-  
ciating its value to us in later life.  
It is axiomatic that as we grow  
older and our memories become less  
agile and retentive, we fall back on  
a pastime called Reminiscences. The  
venue is the park bench, the smoking  
room of the favorite club or the  
drawing room of the Rest Home.  
Many and varied are the arguments  
that take place as to whether Tom  
was the first to own a co-herer, Dick  
used to go out with Elia, or Harry  
owned a spaniel or a setter. The  
arguments are never settled to  
everyone's satisfaction because our  
memories fail us.

It is this particular aspect of our  
instate make-up that we wish to  
discuss—our memory, or rather the  
lack of it, as age creeps up and the  
past becomes less clear. It is, how-  
ever, the facts of our earlier begin-  
nings as an Institute or Amateur  
body rather than Tom's transmitter,  
Dick's lovelife, or Harry's pets that  
concern us. Being in a reminiscent  
mood recently, some old copies of  
the R.S.G.B. Bulletin were being  
perused, and it was interesting to  
note that one of our G contemporaries  
had compiled a series of articles  
dealing with the beginnings of that  
Society—that good old historical  
stuff again. It reminded us of the  
W.I.A.'s lack of it when we were  
more recently again preparing the  
W.I.A.'s proposals for the P.M.G.'s.  
Department and the brief for the  
Institute representative to Geneva.

It is on such occasions that the  
paucity of the Institute's history  
becomes apparent. It is sad to real-  
ise that the history of the oldest

Amateur Society in the world, our  
own W.I.A., is not recorded in some  
lasting form for posterity; and to  
realise also that as the years roll by,  
more and more of our sources of  
information on our History, the Old-  
timers, are gradually dying out. It  
is by them that so much of our  
early history was made and from  
them our present status and organ-  
isation inherited. The least we can  
do for them when they gracefully  
retire from active participation in  
our grand hobby is to give them  
something tangible in the form of a  
properly recorded history to remin-  
isance about in their leisure.

Every individual member, new-  
comer and active old-timer alike,  
can contribute something useful by  
jotting down the outstanding Amateu-  
r events of the day and by for-  
warding such facts and information  
periodically to his Division for trans-  
mission to Federal Executive. There  
it will be safely filed away and re-  
tained in the one place for future  
action. Early copies of Bulletins or  
Journals which preceded our present  
publication are all potential sources  
of information. The memories of  
our active old-timers can be wracked  
and important facts written down as  
they are remembered. From these  
and other sources will emanate the  
facts and our early history unfor-  
gettable.

At the appropriate time Federal  
Executive intend to set down these  
facts so that our early history is not  
completely lost—it is up to every  
individual to record historical facts,  
now in your head, old files, bulletins  
and the like and pass them to your  
Division. You are now required to  
keep a log of your transmissions in  
the technical field, see that you also  
make the effort to record our History.  
W.T.S.M.

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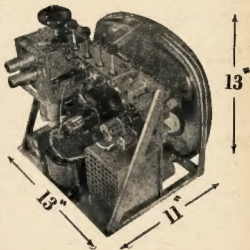
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amplitude plate modulation is permissible, it is obvious that the actual power that could be measured on peaks of modulation is 150 watts d.c. plus 75 watts audio, total of 225 watts.

It has already been mentioned that at 150 watts d.c. input a technical infringement could occur for a modulation index greater than 1. But it is also obvious that on reducing the carrier to zero an unlimited audio power would not be permitted. In this case, for plate modulation, it appears logical to set the limit at 225 watts, wherein the 150 watts of d.c. power generating the carrier is replaced by 150 watts of audio power generating sidebands of increased power. Any carrier power we desire to have should be subtracted from this audio power up to the point of a modulation index of 1. By compromising with the available sideband power to provide a reduced carrier, we can provide the very desirable feature of compatibility with normal a.m., but still meet the competition of d.s.b.c. or s.s.b. in terms of "talk power".

It appears that a modulation index of 3 will still provide clearly readable reception of d.s.b.c. as an a.m. signal, in a receiver having good selectivity. Here the audio power is nine times the audio power required for a modulation index of 1, so that the ratio of audio to carrier is 9 to 1, which allows a d.c. power input of 41 watts, modulated by an audio power of 184 watts. This packs the punch of a standard a.m. transmitter having about 360 watts input.

The modulation index to be used at any particular time can be easily ad-

justed for the conditions obtaining by operating the audio control of the modulator (assuming sufficient audio power is available). For example, on 40 metres, 25 watts d.c. input with modulation index 1 is often quite sufficient for that local or Interstate contact at readability 5. If a high degree of selectivity is available in the receiver at the other station, under adverse conditions for DX, or with QRM, the modulation index may be pushed up to 4 without objectionable distortion, since the high selectivity characteristic obtained by a crystal filter or sharp i.f. enables the carrier to be amplified to a greater extent than the sidebands, so that the detector "sees" an approximately normal a.m. signal. Tailoring of the audio response in the modulator audio amplifier to attenuate the lower audio frequencies will be beneficial since these frequencies, being closer to the carrier frequency, will not be so greatly attenuated in the i.f. stages of the receiver, and could cause low frequency distortion from an overmodulation effect at the detector.

As the modulation index is increased, so the audio from the receiver will "sound louder" for the strength of carrier received with a particular degree of selectivity. The signal will also "sound louder" than other a.m. signals, because, not only is the sideband content greater for a signal registering a similar S meter reading, but, for a signal with similar sideband power at the receiver, the a.v.c. will not be actuated to the same extent. The S meter may show an upwards kick with modulation peaks greater than a mod-

ulation index of 1, and this can be reduced by increasing the selectivity of the receiver.

## POINTS TO BE CONSIDERED

These are:—

1. Since the cathode of the auxiliary tube V2 is above earth, a separate filament transformer winding with adequate insulation for the full modulated h.t., is required.
2. The tubes used in positions V1 and V2 should be of similar types, although not necessarily of the same ratings.

In the matter of tube ratings, it should be observed that standard plate modulated ratings are not applicable. For example, a tube in position V1 having maximum ratings of 60 watts d.c. input for Class C plate modulation service, which is say 90 watts total input on peaks of modulation at a modulation index of 1, is being operated over its ratings at a modulation index of 2 for the same d.c. input, when the total power to this tube may rise to 135 watts. Tube V2 should be capable of taking about half the additional power above that required for a modulation index of 1, which is the other 45 watts of the total of 180 watts in this example.

It should be safe enough in this case to use a tube or tubes rated for 90 watts d.c. input Class C plate modulated service for V1, and a tube rated for 30 watts of audio output power (or sideband power) Class B for V2.

## TYPE 65

General purpose with low frequency response suitable for lively halls.

## TYPE 66

P.A. use where less low frequencies are required than the 65 with a lift in the middle frequency to ensure high output without feedback.

## TYPE 67

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Available in Low (M.D.)  
50 ohms, and High  
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Type 65 MA	£11/0/7
" 65 MD	£8/19/0
" 66 MA	£11/3/6
" 66 MD	£9/3/0
" 67 MA	£11/3/6
" 67 MD	£9/3/0

## ZEPHYR PRODUCTS PTY. LTD.

58 HIGH STREET, GLEN IRIS, S.E.6, VICTORIA

PHONES: BL 1300, BL 4556

It may be noted at this point that a tube capable of carrying a 240 watt d.c. input under Class C plate modulated ratings would normally be required to enable this 120 watts of audio power to be fully converted to sideband power.

If d.s.b. suppressed carrier is to be used with full available audio power, then each tube in positions V1 and V2 should be rated to take half that audio power, and this may be roughly gauged as  $1\frac{1}{2}$  times the plate modulated Class C d.c. input rating.

3. Any h.t. applied to the anode of the auxiliary tube V2 is little more than a bias voltage and, if required, may be obtained from any convenient source having a suitable potential. Variation of this voltage does provide some control of the balancing of V2 with V1.

4. Correct operation of the circuit will produce a trapezoidal pattern on the c.r.o., connected as for normal plate modulation monitoring, similar to that shown in Fig. 2 (c).

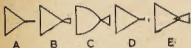


FIG 3

Incorrect operation may result in one of the patterns shown in Figs. 3 (a) to 3 (e), identified as follows:

- Tube V2 not operating, although adequate audio voltage available.
- (i.) Tube V2 mismatched for impedance with V1, or (ii.) insufficient drive to V2.
- Insufficient drive to Tube V1 or an inadequate power handling capability.
- and (e) Tube V2 triggering too late and too early respectively, in the negative modulation cycle. An unlikely fault, but (e) could be caused by too much h.t. bias on the plate of V2 and is to be avoided because of prolific harmonic generation.

5. For like tubes in positions V1 and V2 the final stage is self-neutralised. For unlike tubes, the stage possibly could be neutralised by the addition of a small capacitor across V2 (assuming V1 to have the larger plate-to-grid capacity) in order to reduce carrier leak from the driven tube when operating d.s.b.c.

6. Unstable v.f.o.'s, are particularly undesirable for carrier excitation or re-insertion work.

### A PRACTICAL TRANSMITTER

A detailed circuit of a practical transmitter is shown in Fig. 4. It will be observed that existing transmitters using a pair of 807s or 6146s in the final could be modified to this system without much difficulty.

Suitable operating conditions for such a final are:—

Carrier d.c. input—25 watts.

Maximum modulation index—3.

Audio power for mod. index of:—

1—12½ watts.

3—112½ watts.

Input to V3 at mod. index of 3—25 watts d.c. plus 62½ watts of audio—87½ watts.

Input to V4 at mod. index of 3—50 watts.

"Talk power" equivalent is a standard plate modulated transmitter with 225 watts d.c. input, fully modulated.

When operated on d.s.b.c. up to 120 watts of audio, modulating power may be used without exceeding tube ratings.

A transmitter using a pair of 807s for V3 and a 6DQ6A for V4, with higher carrier input and a smaller modulation index than for the above system, has been in use for several months.

Another suitable combination would appear to be an 813 for V3 and an 807 for V4. This would allow any carrier power from 8 to 150 watts with any modulation index desired, subject to regulations of course. The audio power requirement must not be overlooked here.

### BANDSWITCH TABLE

(For Fig. 4)

Final	Switch	Freq.	Freq.	Freq.
Freq.	Position	at L1	at L3	at L3
3.5 Mc.	3	3.5 Mc.	—	—
7 "	2	3.5 "	7 Mc.	—
14 "	1	3.5 "	7 "	14 Mc.
21 "	1	3.5 "	10.5 "	21 "
28 "	1	7 "	14 "	28 "

### COIL DATA

(Approximate, since coil size required may vary with layout.)

L1—40 turns 20g. enamel, 1" diam., close wound.

L1a—5 turns 20g. enamel, wound at centre of L1.

L2—22 turns 20g. enamel, 1" diam., 2" long.

L3—9 turns 20g. enamel, 1" diam., 1" long.

L4—14 turns 16g. enamel, 1½" diam., 2" long.

L4a—4 turns insulated, spaced 1" from end of L4.

L5—10 turns 14g. enamel, 1½" diam., 1½" long.

L5a—1 turn well insulated from and wound at centre of L5.

Well, there it is. For the enthusiastic "sidebander" this system provides an easy intermediate step for contacts with the s.s.b. gang by way of double sideband suppressed carrier, and yet standard a.m. is still available in the same transmitter.

For the a.m. "diehards" the system provides an answer to s.s.b. by the "super-modulation" effect of double sideband reduced carrier, involving only a comparative minor modification to the existing transmitter, and the provision of adequate power.

If d.s.b.c. is of prime importance, it is suggested that like tubes be used in positions V3 and V4 for best carrier suppression. The screen resistance of V4 could be matched with V3 also.

Clippers and limiters may still be used in the present system to raise the average audio level, although as splatter suppressors they are now superfluous.

As with standard plate modulation, the circuit is not critical in operation

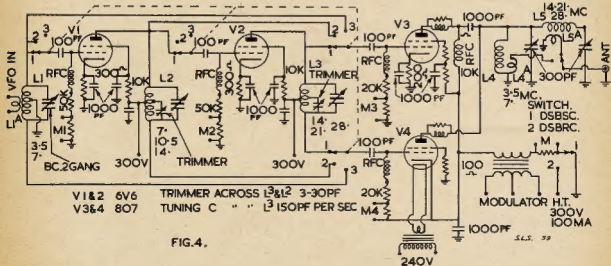


FIG. 4.

and no re-adjustment from band to band or with different loadings is required. "On the air" reports have been consistently satisfactory, both from VK and DX, using the one and only multi-band fixed antenna available. A large number of stations contacted volunteer reports on the loudness of the signal, when using d.s.b.c., in comparison with other signals on the band although the width of the signal is reported as being narrower.

The disadvantages appear to be:

(1) As with any plate modulation system the high audio power required is more expensive to generate.

(2) The signal may suffer more from selective fading distortion effects with the reduced carrier under some conditions.

If this becomes troublesome on some occasions, it is a simple matter to (a) use full carrier and reduce audio, or (b) cut the carrier and wind up audio, after advising receiving station to insert carrier.

(3) Unless a receiver having an optional sideband selectivity characteristic is used, d.s.b.c. is not as easily resolved as s.s.b. However, such receivers are becoming more common and in this case the optional choice of sidebands at the receiver is an advantage.

## SYSTEM HAS OTHER POSSIBILITIES

It has occurred to me that the "Command" transmitter is very easily modified for single band (40 metre) operation, using this system, and an external modulator.

Also, by using Class B modulation it would be advantageous for mobile work, where there is an obvious need for increased phone efficiency without the complexity or critical adjustments of s.s.b. or efficiency modulation systems. In this case the low power carrier generally used for mobile transmitters can be plate modulated to the same extent as a much higher power carrier (in terms of modulating power), giving the same or nearly the same effectiveness, and yet the only increase in power requirement is that the Class B modulator be supplied on modulation peaks.

## SUGGESTED STABLE OSCILLATOR

A "Command" transmitter (i.e. BC 457, etc.) employs a stable oscillator and may be modified to provide an excellent v.f.o. In addition to the usual modifications, a desirable feature would be the provision of internal doubling. This may be accomplished by taking the three following steps:

(1) The output circuit may be tuned to double the oscillator frequency by shorting part of the output tank coil with a switch.

(2) It is a simple matter to attach a shaft to the padding condenser in the output tuning circuit to obtain variable tuning, in addition to the ganged variable tuning already provided.

The padding condenser is locked by a slotted tongue, secured by a screw to the condenser frame. If the screw is removed, the tongue may be bent outwardly into a U-shape, so that the slot in the tongue is opposite the hole in the chassis, originally provided for screwdriver adjustment of this condenser. A key may be filed on the end



The late Harry Hutton, VK2AGU, at the operating desk of his station.

of a short length (about 1½") of brass shaft to fit the slot, the other end protruding through the hole to take a knob. Application of solder to the keyed joint will secure it.

(iii.) The oscillator coil assembly includes a coil feeding the 1625s in parallel from one tapping, a bias circuit on a second (centre) tapping, and a connection to a neutralising condenser (located on the sidewall) opposite the output tuning condenser) from a third tapping.

The modification only requires that one 1625 be disconnected from the parallel grid connection, and the lead from the coil tapping be taken from the neutralising condenser and connected to the now vacant 1625 grid terminal, so that the 1625s are now driven in push-pull.

If one of the 1625 filaments is switched off (simultaneously with the breaking of the short across part of the output coil), the output stage will still be neutralised and will operate as an amplifier, the output coil being tuned to say 3.5 Mc. for maximum output.

On switching on the filament, shorting part of the output coil, and retuning output, the stage will operate as a push-pull doubler with the same efficiency as an amplifier.

It may be desirable to wind 3 or 4 turns of insulated wire around the base of the output coil for link coupling as the original variable link has a rather low impedance for coupling to a line.

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## JAMBOREE-ON-THE-AIR

The first event of this kind was organised last year on a limited scale. It is expected that most Scout countries will take part this year. The Jamboree-on-the-Air will take place from midnight, Friday, October 23, to midnight, Sunday, October 25—G.M.T. Amateurs who have present or past association with the Boy Scout movement are invited to take part. They may join the event by simply calling "CQ Jamboree". Stations may operate on any Amateur wave band and with any equipment which is consistent with license requirements. Apart from individual participation by Scout Radio Amateurs, it is expected that radio stations will be set up in Scout group and district headquarters and on campsites. Radio Amateur clubs and individual Radio Amateurs interested in this event are invited to contact local Scout units to assist them either on a practical basis or by giving advice.

The Jamboree-on-the-Air is not a contest and there will be no prize for the operator making the most contacts. The event is being expressly organised to further the bonds of international friendship and brotherhood which unite the Scout movement.

Scout associations registered with the Boy Scouts International Bureau have been asked to appoint a national organiser for the Jamboree-on-the-Air and names and addresses can be obtained at the national headquarters.

The Boy Scouts International Bureau will operate from a station in Ottawa, Canada, and has acquired the special call sign VE3JAM.

## CORRESPONDENCE

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publishers.

### R.D. CONTEST

Editor "A.R.," Dear Sir,

I feel strongly that the time has come to reconsider the form in which the R.D. Contest is run. I feel that the phone and c.w. sections should be conducted on separate week-ends and as a suggestion, the phone section should be on the week-end nearest 7th May (the date of the termination of the European section of the second world war), and the c.w. section on the week-end nearest the 15th August (the date which the Canadian section of that war ceased). I advance the following as some of the reasons supporting my proposal.

1. The number of stations with VK call signs is steadily increasing, and it is reasonable to anticipate that this increase will continue over the years.

2. The task for the Contest Committee would be very much simplified in respect of checking logs and calculating results, as only one type of contest would have to be considered at any one time, as the open section of the contest would be automatically eliminated.

3. Many stations now limit their activity to the phone section as, without doubt, numbers can be swapped very quickly on phone, whereas if sections on different week-ends they would enter each section whereabouts.

4. The time separation of the dates suggested above is great enough to maintain interest.

5. Overall activity on the bands would be increased, resulting in a much better case to support our retention of frequencies in the future.

—I. NICHOLS, VK7ZZ.



# A TRANSISTORISED Q5-ER

HANS J. ALBRECHT

IN general, a Q5-er consists of an i.f. amplifier on a low frequency, a detector stage, and an audio amplifier. Such a unit has proved to be extremely useful in telecommunications, either in addition to or forming part of a multi-conversion communications receiver. Due to the relatively low frequencies involved it appears to be obvious that transistors, i.e. normal triode-junction transistors, can easily be employed in a circuit of this kind. Nevertheless, transistorised equipment should always be designed in accordance with the technical aspects of transistorisation, and the corresponding design considerations previously discussed have to be observed in this as well as in any other similar case. It is equally important to select transistor types and operating conditions in such a way that the costs of construction and operation are kept at a minimum level.

The Q5er to be described in the following can be used in conjunction with any receiver having a signal output on 455 Kc. If it is to be combined with the i.f. amplifier described some time ago<sup>1</sup>, in order to form a communications receiver together with an r.f. section, a number of points has to be considered. The overall i.f. amplification has to ensure an adequate power level in the demodulation section of the receiver. The output signal required at that point is given by the type of audio amplifier used and also by the signal required for a.v.c. action. The first condition can easily be satisfied as the amount of signal power necessary at the input of the first audio amplifier stage can be calculated without much difficulty. The other condition depends entirely on the kind of a.v.c. to be utilised in the receiver.

As has been indicated previously<sup>1</sup>, the application of a.v.c. in transistorised equipment is to some extent somewhat more difficult than in valve receivers. A signal-controlled shift of the quiescent operating point cannot completely be regarded as sufficient due to the shape of normal transistor characteristics. A preferable method seems to be the introduction of circuit damping proportional to the signal level. Depending upon the component employed to achieve such a damping (normally a diode), the amount of d.c. signal may have to be accordingly large. This means, however, that the overall power amplification of the r.f. part and all i.f. stages must be adequate. It may be assumed that an amplification of 110 db satisfies these conditions with a good safety margin.

The i.f. part of the Q5-er comprises two stages, viz. one i.f.-mixer and one amplifier stage on 75 Kc., with an overall power gain of approximately 50 db. Considering the r.f. part as amplifying the incoming signal to the normal degree, the required i.f. amplification ahead of the Q5-er amounts to about 40 db. The i.f. amplifier previously published in this journal was designed to produce sufficient amplification for the demodulation stage to be coupled directly to its output. Thus, when a

Q5-er is connected to its output, the number of stages in the i.f. amplifier can be reduced from five to three, because the i.f. part of the Q5-er ensures additional amplification. In such a case it is recommended to eliminate the second (second stage on 2 Mc. with an OC170) and the fourth stage (first 455 Kc. stage with an OC45).

## THE 75 Kc. I.F. STRIP

The complete diagram of the Q5-er being depicted in Fig. 1, the first stage contains an OC45 as frequency converter from 455 Kc. to 75 Kc. In other words, the output circuit of the preceding i.f. amplifier is identical with the input circuit for this mixer stage. The oscillator signal is injected by means of emitter coupling and the oscillator itself works on a frequency of 530 Kc. Again, the mixer stage uses normal resistance stabilisation and a stability factor of about two, which, in accordance with the author's previous publications on transistor-circuit stabilisation<sup>2,3</sup> is a value of S acceptable for tuned stages. The oscillator, on the other hand, utilises capacitance stabilisation<sup>2,4</sup>. The transistor employed in the oscillator is an OC73, although other types should work equally well after a careful selection.

The calculation of components for capacitance stabilisation of oscillators

involves special considerations. The following formula, however, has been derived by the author for a simple and approximate determination of the value of N, i.e. the relative change of frequency per degree centigrade<sup>5</sup>.

$$N = \frac{\Delta f}{f} =$$

$$\frac{0.04 C_s^2 [L_{\infty} (S - 1) - 0.06 L]}{\left\{ C_s + \frac{0.42 I_{\infty}}{a f_{\infty}} \right\}^2 a f_{\infty} C_1} \quad (1)$$

where  $C_s$  = Coupling condenser at base (in F.).

$I_{\infty}$  = Zero-input collector current with common base (in Amp.).

$I_s$  = Collector current at quiescent operating point (in Amp.).

$f_{\infty}$  = Cut-off frequency (in cycles/sec.).

$C_1$  = Total circuit capacitance for parallel resonance (in F.).

$S$  = Static stability factor.

$a$  = Current amplification factor with common base.

It has to be emphasised that this formula gives results of approximate kind only. The constants have been calculated for a circuit of the type

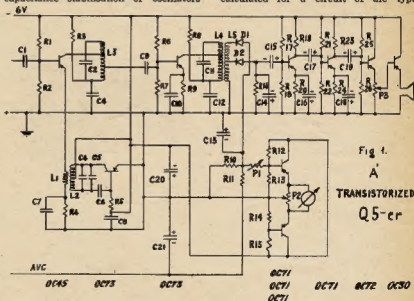


Fig. 1.  
A  
TRANSISTORIZED  
Q5-er

- R1—3,000 ohms.
- R2—2,000 ohms.
- R3—2,000 ohms.
- R4—2,000 ohms.
- R5—1,000 ohms.
- R6—1,000 ohms.
- R7—1,000 ohms.
- R8—100 ohms.
- R9—100 ohms.
- R10—100 ohms.
- R11—50 ohms.
- R12—15—370 ohms.
- R13—15—370 ohms.
- R14—15—370 ohms.
- R15—36 ohms.
- R16—15,000 ohms.
- R17—4,700 ohms.
- R18—1,000 ohms.
- R19—4,700 ohms.
- R20—1,000 ohms.
- R21—20,000 ohms.
- R22—4,700 ohms.
- R23—4,700 ohms.
- R24—4,700 ohms.
- R25—4,700 ohms.
- P1—10,000 ohms.
- P2—10,000 ohms.
- P3—1,000 ohms.
- C1—20,000 pF.
- C2—10—5,000 pF.
- C3—C7, C8, C10, C12—0.1 pF.
- C4—240 pF. (plus 50 Kc. mica).
- C5—40 pF. (minus 750 Kc. ceramic).
- C6—500 pF.
- C9—0.5 pF.
- C10—100 pF.
- C11—10,000 pF.
- C12—10 pF.
- C13—50 pF.
- C14—300 pF.
- C15—80 pF.
- C16—500 pF.
- C17—500 pF.
- C18—500 pF.
- C19—500 pF.

- L1—Number of turns according to coupling required.
- L2—0.3 mH.
- L3, L4—0.9 mH.
- L5—0.9 mH. (tap at one-third).

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20- " " (14.0 - 14.4 " )
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3: 8 - 17 "

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5: 40 - 100 "

6: 100 - 250 "

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"W" Absorption Wave Meter.

"S" Test Oscillator 99 c.p.s. modulated.

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Consumption: approx. 10 VA.

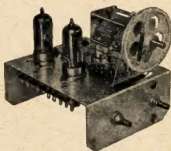
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Weight: approx. 1½ lbs.

Valve: EC32.

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5/8"	22/6	1-3/8"	47/6		
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shown for the oscillator being dealt with, namely Hartley-type with centre-tap, at a temperature of about 27°C, or about 80°F. The static stability factor is identical to the normal stability factor S. If resistance stabilisation is not utilised, its value is given by

$$S = \frac{1}{1 - a} \dots \dots (2)$$

Substituting values of circuit and transistor characteristics, eq. (1) yields  $N = 0.00005$  for the oscillator under discussion.

For capacitance stabilisation, an overall temperature coefficient should be about  $-0.0002$  per deg. centigrade. Therefore, the total circuit capacitance comprises a mica condenser of 240 pF. at a positive TK of 80 and a ceramic condenser of 40 pF. at a TK of  $-750$  TK units.

The output circuit of the mixer is capacitively coupled to the base of an i.f. stage on 75 Kc., equipped with another OC73 in common-emitter connection. Due to the straightforward type of circuitry, a detailed discussion does not appear to be necessary.

**DEMODULATION AND S METEOR**

Referring to what has been said on a.v.c. requirements, two Germanium diodes of ordinary type serve as detector and a.v.c. diode, respectively. The coupling to the last i.f. resonant circuit being inductive by means of L5, the a.v.c. is taken from the full winding with R10 as load resistor. Use of only a part of this secondary winding is made for the detector diode D2 with R16 as load resistor.

A somewhat elaborate S meter circuit measures the d.c. signal across the load resistor of the a.v.c. diode. This stage actually comprises a transistorised d.c. amplifier of the type designed by the author for various professional applications. The two transistors OC71 form a bridge with the instrument as bridge indicator. The potentiometer P1 allows the sensitivity to be adjusted while P2 determines the zero point. The instrument is of normal type and should have a full-scale sensitivity of about one millamp. at an internal resistance of approximately 1,000 ohms.

**THE AUDIO AMPLIFIER**

Although this audio amplifier represents a part of a Q5-er, it is designed as a perfect Hi-Fi circuit with an absolute minimum of distortion and a wide frequency response. The transformerless circuit is a new design using a particular type of output coupling in order to obtain a power output of 0.5 watt in Class A operation at the required d.c. stabilisation.

If reference is made to normal design procedure<sup>2,7</sup> the calculation of components for the two pre-amplifier stages can be regarded as normal and straightforward. The driver employs an OC72 in common-collector configuration and the output stage is equipped with an OC30 in the same configuration. The loudspeaker system (approx. 5 ohms) is directly connected in series with the emitter load. A new advantage of this circuit is the combined control of audio volume and d.c. consumption by potentiometer P3. Varying its sliding contact towards ground reduces the audio signal component at the base of the OC30 as well as its d.c. operating potential,

thus automatically decreasing the collector current of the OC30 in the correct proportion. As this collector current represents by far the largest consumption in the whole receiver, this regulation is an important feature.

It should be noted that in this circuit the operation of the driver is critical up to a certain extent. The value of the current amplification in common-emitter connection, or the "beta", of the OC72 should be relatively high, i.e. of the order of 80. A compromise had to be adopted in the design of this stage, because the employment of another medium power transistor, such as the OC30, did not appear to be justified. Thus this OC72 operates under somewhat critical conditions with a value of S in the vicinity of 20, much higher than anything recommended previously<sup>3</sup>, even for audio stages. If operating conditions are subject to large variations of ambient temperature, the OC72 should be replaced by another type.

As far as construction is concerned, both OC30 and OC72 have to be mounted such that a maximum of heat is radiated. The OC30 requires a heat-sink of an area of about two square inches and a thickness of 0.1 inch, while the OC72 should be mounted by means of the heat-sink clips provided by the manufacturer.

Attention is drawn to the fact that it is hardly possible to achieve electric insulation between the OC30 collector and a heat-sink without undesirable thermic insulation. Thus the best method seems to be an insulation of the heat-sink, complete with OC30, from the chassis, unless this is identical to the negative battery connection.

**GENERAL COMMENTS**

At the conclusion of this description of the Q5-er it appears to be appropriate to express some remarks on the general behaviour of transistors. After little more than a decade, the transistor, and particularly the junction transistor, occupies an important place in electronic development. There is hardly any electronic device which cannot be "transistorised". With the steady progress in transistor production, new applications can be foreseen and new circuits will be developed. Neverthe-

less, there are a few shortcomings, and in design work as well as in the actual application it serves to be aware of them. For instance, it is essential to know to what degree the characteristics published for a certain transistor can be relied upon. Apart from the well known fact that temperature has a marked effect on the instantaneous operating conditions of a transistor, there may be a more or less wide spread of data for transistors of the same type. In such cases the characteristics published refer to average data.

Some manufacturers have almost overcome this obvious disadvantage by carefully selecting transistors before delivering them to the market. Groups of such selected transistors display relatively small spread of "beta", the current amplification factor in the common-emitter configuration, and are then indicated by a different number. For any serious design work this "beta" or the value of "alpha" (= current amplification factor for common-base connection) must be known. Both are related to one another by a constant relationship.

Referring to the circuits discussed and described in this series of publications on transistorised communication receivers, the average value given by the manufacturer has been used as basis of calculation, unless indicated otherwise. All circuit values have to be modified, if transistors of different characteristics are utilised. For this reason, it is definitely recommendable to check at least the d.c. characteristics of each transistor before mounting it.

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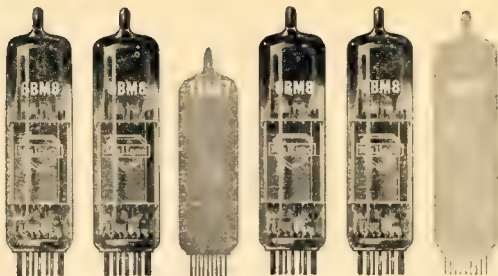
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## 6BM8/ECL82

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#### Single valve class 'A'

$V_h$	250 V
$V_{g2(b)}$	250 V
$\dagger R_{g2}$	2.2 k $\Omega$
$I_{a(o)}$	28 mA
$I_{g2(o)}$	5.5 mA
$I_{g2(max. sig.)}$	10.5 mA
$V_{bi}$	-22.5 V
$R_k$	680 $\Omega$
$V_{in(r.m.s.)}$	780 mV
(Pout = 50mW)	
$R_a$	9.0 k $\Omega$
$V_{in(r.m.s.)}$	9.5 V
Pout	3.4 W
$\theta_{tot}$	10 °

#### Two valves in class 'AB' push-pull

$V_h$	250 V
$V_{g2(b)}$	250 V
$\dagger R_{g2}$	2.7 k $\Omega$
$I_{a(o)}$	2 x 21.5 mA
$I_{a(max. sig.)}$	2 x 27.5 mA
$I_{g2(o)}$	2 x 4.2 mA
$I_{g2(max. sig.)}$	2 x 9.2 mA
$\dagger R_k$	390 $\Omega$
$V_{in(g1-g2)r.m.s.}$	38 V
$R_{sa}$	10 k $\Omega$
Pout	9.0 W
$\theta_{tot}$	5.0 °

$\dagger$  Undecoupled screen-grid resistor

$\dagger\dagger$  Common screen-grid resistor undecoupled

$\dagger\dagger\dagger$  Common cathode bias resistor.

The addition of the 6BM8/ECL82 to the Mullard world series range of valves for audio enables the construction of a complete high quality stereophonic amplifier with **ONLY FIVE VALVES** plus a rectifier. Used with a specially developed Mullard circuit, two pairs of 6BM8/ECL82 valves, one 12AX7/ECC83 voltage amplifier and one 6CA4/EZ81 rectifier will provide two complete ultra linear push-pull channels each giving an output of 7W at 0.3% total distortion. Full constructional details are included in "Circuits for Audio Amplifiers" price 12/6 or 13/3 post paid.

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# SIMPLE SIDEBAND

## PARTS ELEVEN AND TWELVE

### I.F. FILTERS FOR S.S.B. RECEIVERS

In this country to obtain a suitable filter with sharp skirts and a flat top is not easy. Yet, the problem is not insurmountable. For those who have mechanical filters—and there are a few—the connections to the i.f. strip of the receiver described last month are as shown in Fig. 1.



Fig. 1.—A mechanical filter may be used with the receiver described last month.

Fig. 2 shows the circuit of a filter using 455 Kc. i.f. transformers. I recently built one of these using four transformers back to back and coupled together with only 1 pF. of capacity. The coupling condensers are made from hook-up wire—two pieces twisted together, about two or three turns. A filter of this type, even at 455 Kc. will shave QRM right off a signal. Though it will not allow you to select sidebands one at a time without some interference from the unwanted, the unwanted will be well down. You may easily check this by getting an s.s.b. station to switch to the other sideband.

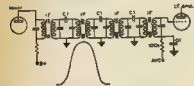


Fig. 2.—A block of flat Philips' i.f. transformers connected back to back, coupled together by only a few pF. capacity, will make an excellent filter. C1 made by twisting together about two turns of hook-up wire.

With any selective i.f. system it is absolutely essential that you set the b.f.o. on the correct side of the signal. When copying s.s.b. the receiver is not tuned as for a.m. With a.m. you set the carrier in the centre; if you tune out to one side or the other the signal will become harsh and topky. With s.s.b. you tune the receiver not to the centre but to one side. The received sideband is now sharp in the centre of the passband, so therefore the carrier (the b.f.o.) must be to one side. If the signal won't tune with the b.f.o. on the one side set it to the other. The spot at which it should be set is quite critical if the filter is sharp.

Fig. 3 shows a crystal filter known as the half lattice. This filter is ideal for s.s.b. My own filter consists of three sections of half lattice and in addition it has two filters connected shunt-wise, i.e. across one of the i.f. transformers. These crystals help to suppress "pop-up" or sidelobes. It is

### THANKS TO ZLIAAX

This fine series of articles having now come to an end, the Publications Committee of the W.I.A. wish to express sincere thanks to Lester ZLIAAX for permission to reprint his "Simple Sideband" articles from the N.Z.A.R.T. journal "Break-In".

As Lester's articles have been reprinted in many countries, he has been receiving more than a fair share of letters. Therefore readers are requested not to write to Lester unless, in his own words, "they are desperate."

Having received many requests for the layout, etc. of his receiver (described last month), Lester forwarded a photograph of same for publication; this has been included in this issue.—Editor.

not my intention to spend much time on crystal filters because the subject has been well covered in the A.R.R.L. and "CQ" Sideband Manuals and builders are well advised to purchase these. A word of warning though: crystal filters are tedious to adjust if you would get the best out of them. To get sharp skirts, flat top, little pop-up and a good over-all performance requires perhaps hours of adjustment.

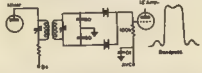


Fig. 3.—A half lattice crystal filter. Several sections may be cascaded to get even a better bandpass. It is recommended that you see the A.R.R.L. S.s.b. Manual for further information on filter design.

### Points When Lining-Up

A few points, fruits from my own labours, I offer:

- If the bandpass has a large dip in the centre, use less capacity and more inductance in the secondary side of the i.f. transformer.
- If the bandpass has a rounded nose use more C and less L.
- A wobblur used in conjunction with a scope will let you view the general shape of the bandpass but it is generally quite useless to determine skirt shape or pop-up. The scope reads voltage and of course the ratio of voltage, from the flat top of the band pass to the clefts at the bottom, is much too great to be readily presented. This could perhaps be done with a suitable a.v.c. system or compressor. However, it is simple enough to use the S meter in conjunction with a frequency meter and then use the wobblur to get a picture of the top.

(d) A 6 db. dip in the centre is permissible and in fact will not be noticed.

(e) Not all i.f. transformers lend themselves to filter work without their innards be altered. The Q type 162 with the two condensers connected across the secondary is excellent.

Another filter which will give excellent results can be made from 85 Kc. i.f. transformers. The mixer in the receiver described last month feeds into a second mixer which also has a suitable oscillator fed in to heterodyne the signal to 85 Kc. After passing through several stages of 85 Kc. i.f.s, the signal is then fed into a third mixer, mixed with the same local oscillator and fed back into the receiver. The block diagram of Fig. 4 will give you the idea. Though it may perhaps sound complicated, it really isn't and it is an excellent system and can be added to almost any receiver. The low frequency ARC5 (BC453) receiver may be used for this purpose and indeed Cliff ZL-2AHV used this system for some time. The system lends itself to sideband switching, by making the local oscillator operate either on 370 or 540 Kc., switching from one frequency to the other will switch sidebands.

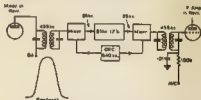


Fig. 4.—Popularly known as a Q5-er, the 455 Kc. i.f. is converted to 85 Kc., passed through a series of i.f.s, and then converted back again to 455 Kc. Only one local oscillator is used. The 85 Kc. i.f.s may be taken from the BC453 receiver. The system may be used with any receiver with any i.f. frequency, merely by opening one lead.

It is pointed out that these filters have been primarily designed for s.s.b. or c.w. The i.f.s. would need to be staggered for suitable a.m. reception unless the station is actually copied as an s.s.b. signal. However, so many a.m. stations suffer with f.m. and oscillator drift, especially on 80 metres, it is not usually possible to read them with the filter in circuit.

### CRYSTAL CONTROLLED CONVERTER

Fig. 5 shows a crystal controlled converter for use with the receiver published last month. You will note that the converter is quite conventional in almost all respects. But for all that it is worthy of some comment in that its operation is the exact reverse of the heterodyne unit described last month. Whereas, in the heterodyne unit we converted an 80 metre signal to the requisite band by beating it against an overtone type local oscillator, in the

converter we convert the incoming signal to 80 metres. The local oscillator frequencies are the same in both cases and, in fact, you may if you wish use the one oscillator to do the two jobs.

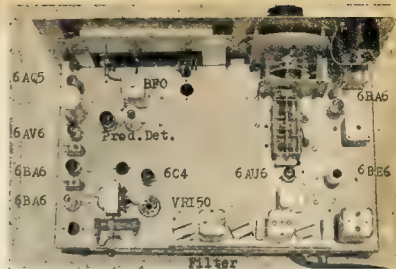
The remainder of the converter is straight forward and similar converters have appeared in journals from time to time. We will not discuss it further except to state that in my own opinion a crystal controlled converter is essential for easy 20, 15 and 10 metre s.s.b. reception.

#### A SUMMING UP

Perhaps I may have given the impression that in the generation of s.s.b. the two-coil method of obtaining the 90° r.f. phaseshift is the only method and I have in fact been taken to task on this point. Far from the case; I have myself used seven different methods. If I gave the other impression it was inadvertent. To describe all the various methods there are would require a book of some considerable volume.

I described the most popular method in use in the U.S.A. The two-coil method is used by the world famous 10A and 20A exciters made by Central Electronics and is well proven. Secondly, most of the available literature from which an exciter may be built is based around the two-coil r.f. phase shifting device. The system lends itself for use with diode type balanced modulators which is a very distinct advantage, and yet, at the same time, it has quite high output. It is well to know though that it does have several disadvantages. The adjustment of the coils is somewhat tricky, especially for the newcomer, and the settings tend to drift with age. In addition, the coils are most particular about strays, where capacitive or inductive. Placing a bottom on the chassis may put you in double sideband in a big way; feedback to the coils from later stages may give all sorts of peculiar effects.

Other systems which may use resistance/capacitor networks (R/C), in-



Photograph of the receiver described in Part Ten of the Simple Sideband series published last issue. It is reproduced here after a large number of enquiries were received for layout drawings, etc. The i.f. filter is along the back of the chassis. I.f. amplifier at one end, r.f. and mixer other end. Space in the centre is for a converter. Various holes are the result of much experimentation in initial design. The VR tube was missing from the octal socket when photograph was taken.

ductance/capacitor (L/C), or combinations of R/C/L, may all give truly excellent performance and should not be overlooked. You may even use a quarter wave length of transmission line properly terminated in resistance to get the required shift through a quarter wave length at 80 metres may make a somewhat cumbersome transmitter to say the least! To reduce the bulk the transmission line may take the form of a terminated delay line and it is this system that is in use at station VK2ZF in Sydney.

About balanced modulators; though I may quite well be alone in my opin-

ion, I feel that multi element tubes in the phasing rigs are to be deplored. I have not yet heard, or have been able to construct, balanced modulators using multi element tubes that did not allow the persistent and annoying creepage of carrier. Diode balanced modulators, because they are low impedance, offer a good measure of stability. If you are embarrassed still by the creepage of carrier, this more than likely will be due to one of the following: Crystal oscillator operated at too high a voltage; unstable power supply; feedback from later stages; r.f. being allowed to escape past the balanced modulators from the crystal oscillator to the amplifier stages. I strongly recommend that the entire supply be regulated by two VR tubes in series and that the B+ be not more than 255 volts. I take it for granted that you will attend to the shielding.

Whether you use semi-conductor or vacuum tube diodes is a matter of personal choice. If you use germanium diodes use only good ones. Cheap diodes proved most unstable in various set-ups used at this station. In general, shilling for shilling, I think the best results are obtained from the tubes.

Concerning the audio equipment, builders of s.s.b. phasing exciters should restrict the bass notes. This is more important than may be realised. In many cases the flutter, growl or low whine on the speech may be attributed to an excess of bass. If the receiver has good selectivity or poor bass response this may not be noticed but it is well to remember that most Ham receivers in this country are poor receivers when measured by today's requirements. A station that has restricted speech, provided that it is not overdone, is a pleasure to tune. If the station has restricted the top it will be obvious that he will occupy less

## SINGLE SIDEBAND ENTHUSIASTS

### A.R.S.5. PHASING TYPE 9 Mc. S.S.B. EXCITER

This unit is intended to drive a Power Mixer (2E26, 6146, etc.). We recommend this type where it is desirable to provide power to a p.a. stage for use under normal Plate Modulated A.M. conditions as well as either S.S.B. or Phase Modulation. **Valve Complement:** Half 12AT7, xtal osc. (8.75 Kc.); half 12AT7, audio output; 12AT7, audio amp; 12AT7 phase splitter; two 6AL5s, balanced modulators; 6BA6, linear amp.

**A.R.S.5A.** Similar to A.R.S.5 except that a low level mixer stage is included, providing output on all bands when mixed with external mixing voltages. This unit is preferred where S.S.B. and P.M. are required only. **Valve Complement:** Same as A.R.S.5 except the 6BA6 linear stage is changed to a 6BE6 mixer.

**A.R.S.59. 7 Mc. Mobile S.S.B. (Phasing Type).** Frequency range: 7070-7150 Kc. xtal. Power output, 80 watts peak. Provision included for P.M. **Valve Complement:** Same as A.R.S.5 unit with the addition of an 807 "ZL". Linear and 6BJ5 clamper tube. This unit is primarily designed to fit neatly into the glove box of a Holden car. Available in either 6 or 12 volt. Power supplies and xtals not included.

PRICES: \*A.R.S.5 £25/10/0; \*A.R.S.5A £27/10/0; A.R.S.59 £72/10/0.

\*Valves excluded.

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A few weeks back I heard an a.m. station state that the audio equipment he was using was hi-fi and he was quite proud of the fact. I measured his bandwidth and although he was not fully modulated, he was 20 Kc. wide! What he gained from this I am not able to understand, for most Ham receivers are anything but hi-fi! Later I measured an a.s.b. station who was using restricted speech and his detectable bandwidth was 2.8 Kc. However, I am not in favour of a speech so restricted, it sounds as though the operator is either being slowly strangled or alternatively, that he has his head in the milking bucket. 300 to 3,000 cycles is an accepted good standard.

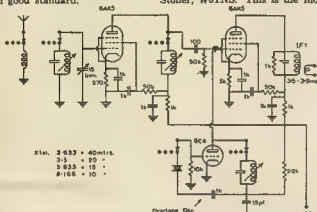


Fig. 5.  
Suggested  
Crystal  
Controlled  
Converter.

Klat,	3-533	• 40mirs.
	3-5	• 20 "
	5-833	• 15 "
	8-168	• 10 "

Loading of the final is far more important in s.a.b. than in a.m. If you don't load heavily, you will be unable to turn up the "wick" without splatter or flat top. But don't forget, that through incorrect adjustment or perhaps poor loading, you may quite well

Of great interest to s.s.b. Hams will be the recently published "CQ" Sideband Handbook written by Donald Stoner, W6TNS. This is the most com-

and I like even, this must rich an end. I quite proudly feel that the series has, perhaps in no small measure, helped a number of Hams enjoy the wonderful advantages of s.b. Quite recently, whilst on 20 metres I was called by a W who claimed I was responsible for getting him on sideband. Once I had realised that he wasn't going to take me apart I felt, as I have felt on many occasions now under similar circumstances, that it has all been worthwhile. What better reward than to have someone tell you he is using a piece of equipment you described, or better perhaps, designed?

## LITERATURE

In the continuation of Fig. 3 on page 7 the grid of the 6C4 meter amplifier should connect to letter "E" and not to letter "A".

## GOING S.S.B.?

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## BOOKS OF THE YEAR FOR RADIO & T.V. ENTHUSIASTS

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★ BEAM ANTENNA HANDBOOK, by Orr	32/6 " 6d. "
★ CARE AND REPAIR OF HI-FI, by Feldman	31/- " 1/- "
★ RADIOTRON DESIGNER'S HANDBOOK, by Langford Smith	55/- " 2/6 "
★ T.V. SERVICING GUIDE, by Deane & Young	20/9 " 1/- "
★ G.E. TRANSISTOR MANUAL	20/3 " 1/- "
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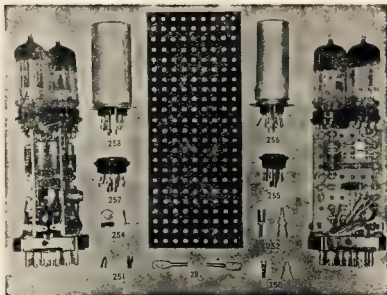
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## JOHN MOYLE IN GENEVA

John Moyle, VK2JU, the W.I.A. official representative with the Australian Delegation to the Administrative Radio Conference of the International Telecommunications Union in Geneva, arrived in Switzerland on August 14 to attend the Conference.

The first week or two was one of feverish activity, organising introductory sessions to set up machinery, elect officers to the various working committees, of which there are eight in all, and generally set this vast meeting of internationals in motion.

Of the eight Committees, No. 4 is the important one to the Amateur Service throughout the world, being the one dealing with frequency allocations. The chairman of this committee is Mr. Gunnar Pederson, from Denmark, with Mr. E. J. Stewart, leader of the Australian Delegation, and Mr. Oltuskiy Ozaki, from Cuba, as Vice-Chairmen.

Committee No. 1 is a Steering Committee concerned with the procedure of the Conference and chaired by Mr. Charles Acton from Canada; Committee No. 2 is a Credentials Committee whose work is self evident and its chairman is Dr. F. Nicobera from Italy; Committee No. 3 is a Finance Control Committee chaired by Mr. George Searle from New Zealand; Committee No. 5 is a committee dealing with frequency legislation and the International frequency list with Dr. M. Joachim from Czechoslovakia as chairman; Committee No. 6 is a Technical Committee chaired by Mr. M. N. Mirza from Pakistan; Committee No. 7 is an Operations Committee chaired by Mr. Enhle from the Netherlands; and finally, Committee No. 8 is a Drafting Committee concerned with the actual wording of conference documents with Mr. A. Henry from France as its chairman.

Committee No. 4, which interests us, commenced its work on the frequency table between 1 and 30 Mc., starting at the low end. As at the last report from John Moyle, the Committee had reached 2 Mc., so we can obtain from this some idea of the time consuming detail with which the Conference engrosses itself.

If a contentious point arises, it is handed over to a "working group" whose duties then are to discuss this particular point and present its report back to the Committee which might adopt it or reject it, when further discussions take place and it could go back to the "working group" for a second time. Finally, the work of all the Committees goes to the Plenary Session and ultimately to the Plenipotentiary Conference which signs the agreements which the communications services of the world abide by until the next Conference.

So far there has been quite unexpected support for an Amateur allocation between 1,500 and 2,000 Kc. and it would appear at this stage that we might expect a "top band" assignment some time next year. Australia has had an assignment in this band for many years but only for emergency purposes since Atlantic City in 1947. The Postmaster-General's Department has never

varied its intention to release this band to Amateurs for general usage as soon as Loran services moved out. Insofar as the major Commonwealth airports are concerned, Loran has not been in use for some time, hence at the time of this Conference it appears as though Loran is officially moving out. However, we shall probably hear more about this at a later date.

Before John Moyle left Australia it was evident from the American proposals that the U.S.A. would energetically oppose the introduction of further short-wave broadcasting channels and John Moyle reports that this position still pervades the general atmosphere at Geneva. However, the pressure for commercial frequency assignments in the 3.5 and 7 Mc. bands is, on a worldwide basis, extremely heavy and it is reported that we are unlikely to achieve success in retaining our present allocations if the Conference is prepared to accept changes.



John Moyle, VK2JU (at right), the W.I.A. official representative with the Australian Delegation, being farewelled by Neville Williams, VK2XV, at Kingsford Smith Airport, Sydney, on his departure to Geneva to attend the International Telecommunications Union Conference.

The Australian Delegation advised the W.I.A. before its departure that there was the possibility that the Conference may agree to making no changes at all in the frequency spectrum between 4 and 30 Mc., and John Moyle reports that there is still strong feeling in support of this, despite the fact that the Committee (No. 4) is going right through the frequency table during its discussions.

Apart from attending meetings with the Australian Delegation and the Frequency Allocations Committee, John Moyle has had informal meetings with Amateurs from other countries and discussed the general operation of the International Amateur Radio Union.

## WANTED! WANTED!

Applications for post of Federal Secretary of the Wireless Institute of Australia. Applicants must be a member of the Victorian Division of the Institute and have ability to use typewriter. Reorganisation of Executive will limit duties to reasonable man-hours. Interested persons please ring the Federal President at MU 2426 without obligation.

FEDERAL EXECUTIVE.

We will give a general report on this aspect of Amateur affairs at a later date.

Generally speaking, the attendance of a member from the W.I.A. has been well received by other countries and has provided a liaison from Region III, which would never have otherwise been possible. We are looking forward to further reports, details of which we

hope to publish in "Amateur Radio," as the Conference works onwards from 2 Mc.

The following Amateurs are attending the I.T.U. Conference

OEIAD, HBIA (Act. Secretary-General of I.T.U.), VESAC (leader of Canadian Delegation and I.T.U. Chairman), GGL, HBSP, DLJK, DLSD, HBDE, HBAS, WICXA/WBIMX, OKIW, SMDZ, GGNZ, ZLSAK, VEZE, VESCD (ex-FTE), VESJK, VESATU/GGSK, WIBUD, HBES, GHTK, VK2JU (W.I.A. Representative), WILVQ, ZSSE, ZLVA, DLSD, WZOGK, KKH, WRAK, W4VVA, EIAN, VK2PI (L. Pearson), VK2KI (E. Anderson), WAGO, YVSDQ, AVSAC, HBRS, GMA, LUBEL, LUBAY, LUZAF, ex-WBYUO, LUTSE, ZLACC, HBMA.

Amateurs meet at 6.15 p.m. every Monday at the Bagatelle Cafe, Place des 22, Cantons.

There are no Russian or East German Hams present.

FEDERAL EXECUTIVE, W.I.A.

## November 21-22, 1959

## RULES

- ## BATTLE STORY

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- Amateur Radio, October, 1959



Amateur Radio, October, 1959





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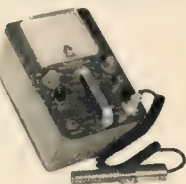
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#### HEATHKIT AG-10

##### SINE-SQUARE GENERATOR KIT

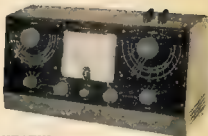
If you need high quality sine and square waves over a wide range you will find the AG-10 ideally suited with many top quality features for truly outstanding results. Both sine and square wave outputs may be used at the same time without affecting either waveform. This unit provides a frequency response of plus 15 db from 20 cps to 1 mc on both sine and square waves with less than 0.25% sine wave distortion from 20 to 20,000 cps. Sine wave impedance is 600 ohms, square wave output impedance is 50 ohms except in 10 volt range. Square wave rise time is less than 0.15 microseconds. Features include a five-position bandswitch—continuously variable tuning—shielded oscillator circuit—separate step and variable output attenuators in ranges of 10, 1 and 0.1 volts for both sine and square wave with an extra range of 0.01 volt on sine wave. A special control is provided in the oscillator circuit to compensate for differences in tube characteristics, thus assuring absolute minimum distortion. The well-filtered power supply uses silicon-diode rectifiers and a husky power transformer. Measures 13 inches wide, 6 1/4 inches high, and 7 inches deep.



#### HEATHKIT RC-1

##### RADIATION COUNTER KIT

Ideal for use in prospecting or in medical industrial laboratories. Meter ranges are 0-100, 600, 60,000 counts-per-minute, and 0.02, 0.1, 1 and 10 milliroentgens-per-hour. Complete, includes batteries and safe radiation sample for calibration. Coiled cord between probe and instrument—no tangling. Size: 9 1/2 in. high, 6 1/4 in. wide, 3 in. deep.



#### HEATHKIT QM-1 "Q" METER KIT

Take the guess work out of electronic testing with this time and labour saving instrument. Once financially out of reach of the average serviceman Heathkit "do-it-yourself" prices make it possible for any technician to own a high quality "Q" Meter. The QM-1 tests components at frequencies at which they are normally used (150 kc. to 18 mc.). Wide range of inductance, capacitance and "Q" will cover practically all values encountered. All indications are read directly on a large 4 1/2 inch, 50 microampere, panel-mounted meter. A 12AT7 oscillator with pre-wound coils is used to obtain the full frequency range on four bands. Oscillator output is metered to provide constant injection. A complete v-t-v-m circuit is used as a resonance indicator, using a 5AL5 twin diode and a 12AU7 v-t-v-m amplifier. Voltage regulated and transformer operated power supply utilizes a 6X5 full wave rectifier and an OD3 regulator tube. A special test coil is provided for calibration purposes.



#### HEATHKIT S-3 ELECTRONIC SWITCH KIT

The S-3 allows oscilloscope observation of two signals simultaneously, such as input and output of amplifiers. Comparing waveforms will help you localize faults quickly. Separate gain controls are provided for each channel, with sync. output to lock oscilloscope sweep or time base to signal frequency. A position control is provided to separate or superimpose the two waveforms. Frequency response is plus or minus 1 db from 0 to 100 kc. Four switching rates of approx. 150, 500, 1,500 and 5,000 cycles.

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● N.S.W.: 307 KENT ST., SYD.—BX 1111. Also Newcastle and Wollongong.

## NOTES

### FEDERAL

#### FEDERAL SECRETARY RESIGNS

It was with regret that the Federal Executive accepted the resignation of Federal Secretary Douglas Bowie, VK3DU at its meeting held on 26th August.

Doug joined the Executive in June 1954 and carried out the duties of Federal Secretary for five years in a most commendable manner. During a trip abroad last year he spent much of his tour time in liaising with overseas Amateur Societies for the general benefit of the Wireless Institute of Australia.

This year Doug, unfortunately, had to undergo a serious operation and it is for reasons of regaining his health that he has reluctantly resigned the post. Federal Council and members will join in thanking Doug for his painstaking attention to the office of Federal Secretary and wishing him a rapid recovery to normal health.

### FEDERAL QSL BUREAU

The Israel Amateur Radio Club has announced the winners of their 1955 Jubilee Marathon. The world winner was HB8ET with 53M4L as runner-up. Amongst the country winners are Australia, VK3CKN, New Zealand, ZL1APM, CH3KX and CH3VK/O who will be on the air from the Aaland Islands (in Baltic Sea) starting on September 17 and continuing until 31st, mainly on c.w. They propose using 3.5, 7 and 14 Mc bands but not simultaneously.

Those needing Burns should keep an ear open for XZ3GM, who is regularly active using 35 watts to a ground plane. The operator is M. G. Appleton, 30 Tarnow Road, Rangoon, Burma. He QSLs all contacts.

Details of the Cabo Branco Award, which is issued by the Association of Radio Amateurs of Paraíba, Brazil, may be had from this Bureau.

The amended Budget proposals (Australian) recently released show that QSL Bureau costs will rise by 50 per cent. The original proposal would have increased costs by 175 per cent.

—Ray Jones, VK3RJ Manager

### FED. CONTEST COMMITTEE

#### NATIONAL FIELD DAY

One of the duties of the Federal Contest Committee is to endeavour to conduct Contests such that "a good time is had by all". It was with this object in view that the proposed rules for N.F.D., as published in last month's "A.R.", were formulated. Most of you participated in the Contest and the results regarding whether you gained a high score or not. Why then cannot the N.F.D. be also an unusual contest that is looked forward to by all? It should have a high participation figure as similar contests con-

ducted in the U.K. and the U.S.A. are very popular.

What the P.C.C. have to decide is what makes Contests "tick"? If you do not write and let us know your opinion, good or bad, of the proposed N.F.D. rules, we are left in the dark and have to use "hit and miss" methods.

We know that writing a letter is a task avoided by most of us. If this is so in your case, why not discuss the matter over the air? Perhaps you are in a net on 40 or 80 metres, or better still, pass your views to a VK1 station. You may be sure they will reach the P.C.C. via the grape vine.

Most important, you must start to get your gear together for the National Field Day NOW! Address your letters to the Federal Contest Committee, W.L.A., Box 3718, Hobart, Tasmania.

### NEW SOUTH WALES

The August meeting of the N.S.W. Division was held as usual at Science House on August 28, approximately 40 members being present.

We were very glad to welcome to our meeting two interstate members, 5OM and 5ZAW, who met many of our local members. We would like any interstate visitors to join us at our meetings and to pursue the subject in a most workmanlike manner and using the Australian Charts as an example, showed how predictions may be read giving us the most reliable time and frequency for a contact between two predetermined points.

The amount of detail necessary to such a chart was given and the usual range used before Frank had had the opportunity to explain the world-wide prediction charts, but these will be the subject of a further lecture by Frank in the very near future. A number of questions were asked of the lecturer, and the vote of thanks to Frank was proposed by Mervyn 2YV and seconded by the Council.

A discussion then took place on the Minutes of the Federal Convention, these were explained by the President in the usual manner. Bob 2ARG These items are to be ratified at the next meeting which was to have been held on September 25.

The meeting was then closed by the President at 10.30 p.m. and members and visitors adjourned for coffee and the usual ragwag which continued unabated until lights out.

#### BLUE MOUNTAINS SECTION FIELD DAY

The Field Day for the Blue Mountains Section will be held on 1st and 2nd September. On 25th October, registration commencing at 10 a.m. at a cost of 10/- for the whole family. A full programme of scrambles and competitions will be arranged under the usual manner, with some excellent prizes to be given to successful entrants. Full details will appear in your Bulletin this month and we would urge you to pack the family off to Lawson on that day as an excellent time will be spent by all. The scrambles will be conducted on 2, 5 and 40 metres, so include the gear for mobile and portable operation.

#### GOSFORD FIELD DAY

The Annual Field Day arranged so successfully by the Gosford boys will be held this year on November 22, the location being the Gosford Sailing Club as previously. This Field Day is also a must for all as an excellent programme is arranged to suit all tastes, with good prizes to be won. No details are yet to hand, but will be included in full in the October Bulletin. So fellows, give the family

### SILENT KEY

It is with deep regret that we record the passing of:

VK2SS—A. Skeen-Smith.

VK2AG—Harry Hutton.

VK7AJ—A. W. Johnson.

another day out in the glorious surroundings of Brisbane Water, and give the organisers encouragement in their efforts.

Members of the Central Coast Zone are reminded that a hook-up is held each Monday at 4.30 p.m. at 1835 Ko. It requests that all zone members make an endeavour to appear on this net.

### SLOW MORSE TRANSMISSIONS

Permission has been received from the Postmaster General's Department to conduct slow Morse transmissions on 355 Kc for the benefit of those who wish to attain their Certificate of Proficiency. These transmissions will fill a long felt need, and arrangements are being made to recruit a body of operators to conduct these sessions, if possible on a nightly basis, so anyone who feels they can give up a half hour once a week would be welcome to submit their names for the roster of operators. Full details of the schedule will be given in the Bulletins and the weekly broadcast over VK3WI.

### ALBURY RADIO CLUB

The Albury Radio Club has been formed but recently, however, that short period much has been accomplished. The seven licensed Amateurs from Albury and a number of enthusiastic lads in the district have banded together to form the club, which is now driving force of the President, Noel RJ2, and his willing band of workers have progressed to the stage where the club is about to apply for its call sign.

The club has been fortunate in obtaining a room at the Albury High School, the staff of which have given full support to the venture. A start has been made on the W.L.A. A.O.C.P. course and a number of associates are making good progress under the guidance of Don RJ2 and other instructors.

As further instruction, the club is building its own gear, keeping as far from disposal gear as possible. The construction is commencing on the erection of the antenna. New members are being sought, so we suggest any local enthusiasts attend the next meeting and join the band.

### HUNTER BRANCH

Your Branch President, Lionel 2CS, was in fine form during the August meeting and almost obtained some converts to a.s.b. Some animated cross-talk was flying around as 2CS still remains to be convinced about something or other. Lionel was quite illuminating and even the tenacious bull showed signs of capitulation on several occasions. Zulu Lulu wasn't there or the bull would have burst its inside. Those present were 2CS, 2SF, 2ZMO, 2RG, 2AL, 2ACX, 2XZ, 2YV and 2YV. 2YV and Associates Sutherland, Gray, Bailey, Richardson, Davies, Sumner and Frye. 2AQR was welcomed as a visitor but is still wondering why? Names are rolling in for the Annual

### WIRELESS INSTITUTE OF AUS. HUNTER BRANCH, N.S.W. DIV.



### EIGHTH ANNUAL CONVENTION

SATURDAY and SUNDAY,  
3rd and 4th OCTOBER, 1959



#### PROGRAMME:

Saturday, 7.30 p.m., October 3—  
Dinner at University of N.S.W. Newcastle, Guest Speaker: Hon. Alan Fairbairn, M.R.R., VK3KK.

Sunday, Oct. 4, Blackalls Park—  
9.30-10.30 a.m.: 144 Mc Hidden Tx Hunt.  
10.30-11.30 a.m.: W.L.A. Exam.  
11.30 a.m.: Disposal Sale.  
Noon Lunch.  
1.15-2.15 p.m.: 7 Mc Scramble (no a.c. permitted).

3-4 p.m.: 144 Mc Hidden Tx Hunt.  
4.30 p.m.: Prizes, singing, fireworks, etc.  
Until race and competitions for 3Y1s and Harmonics.  
Boiling water will be available free.

### CONTEST CALENDAR

Compiled by W.J.A. Fed. Contest Com.



#### VK-ZL DX CONTEST, 1959:

Dates: Phone—1600 GMT, Saturday, 3rd Oct. 1959. C.W.—10th Oct. 11th Oct. 1959.

Kales. Overseas, as for 1957 VK-ZL. Bonus value altered (see August A.R.).

#### "CQ" WORLD-WIDE:

Dates: Phone—Last week-end Oct. '58.

CW Last week-end Nov. '58.

#### R.S.G.B. 21/28 Mc. PHONE

CONTEST:

Dates: 0700 hrs. Sat. Nov. 21, to 1900

hrs. Sun. Nov. 22, 1958.

Kales. See "A.R." October, 1958.

N.S.W. CENTRAL COAST SECT.

★

## GOSFORD FIELD DAY

will be held on

SUNDAY, NOVEMBER 22

at the

GOSFORD SAILING CLUB

★

40 AND 2 METRE HUNTS

XYL BOAT TRIP, ETC.

Reg Brook, VK2AI, Secretary

Dinner and Blackall's Field Day, both of which will probably be over before you read this, hope to have a full report in the November issue, but it will be close as my tripe-writer is of the QRS variety.

Recently had the opportunity to peruse a list of Amateurs of the Hunter Valley and a breakdown showed that of the 86 full licensees, only 40 were members of the Institute, the 2 calls were 13 with six non-members, there were also 23 associates. On these figures it looks like some local propaganda is called for. Even some of the hickies who retain their call sign for sentimental purposes only might be enticed to become active—look what happened to Bill ZL. Talking of Bill, I doubt if there is anything in the rumour that he is a member of the Horological Guild, though he did mend his grandmother's grandfather clock. At present Bill is losing a lot of sleep trying to find a way to install a motor to save him having to wind him—her—it up. Address all ideas to Phenix May.

Lionel KCS blamed a crook fuel pump for the reason why he blotted his copy book by being late for his 2AWX broadcast the other night. It truly would not, it was probably some other pump trouble as no doubt he was celebrating a certain promotion that came his way. Going from the sublime to the ridiculous, Stuart ZEDY thought he would like it easy returning home after a few months in VTM, but nearing Goulburn he saw the stork flying past his car. The bird won but Stuart was the ultimate winner with a bonus baby. Congratulations to you both. The powers that be apparently heard of the event and promoted Stuart to production super; very appropriate.

Lionel is at present on holidays in the premier State—apparently needing the stronger Queensland sunshine to strengthen his eyes for future viewing of the square box with three channels in it. Extremely please to hear the voice of Ron 2ASJ on the 2AWX call-back, keep it up Ron and all the best. Les RHJ, with a 12M for company, was on holidays at Pt. Stevens, but the fish didn't bite. Bill 2XT still working Yanka galore, believe he expects to meet some in person later on this year. Well, chase, next meeting is on 3 October, 8 usual place, so come along and compare your doings of the week before at Blackella.

### VICTORIA STATE CONVENTION

The Victorian Division W.I.A. State Convention will be held at Stawell this year during the week-end of 3rd and 4th October. The Convention Dinner will be at the Commercial Hotel, Stawell, commencing at 8.30 p.m. on Saturday, 3rd October. On Sunday, 4th October, during the morning an 80 mhz transmitter hunt and a 2 mhz fox hunt will be held for those interested, or a visit to the wild flowers for those who desire to see the bush life. A picnic lunch (bring your own) will be held at Hills Gap and during the lunch period some disposals equipment will be sold. In the afternoon there will be a scramble and other entertainments.

#### SOUTH WESTERN ZONE

The closing date for accommodation for the Convention being held at Warrnambool on the week-end of 31st October and 1st November, is the 1st October.

The dinner on Saturday evening will be held at 8.30 p.m. at Eckers Hotel. Bookings will be taken up until 23rd October if accompanied by a deposit.

2PS and 2ARJ will be on the air from 3 p.m. on the Saturday on the 3 and 7 Mc bands to work all the mobiles. Operators at Warrnambool, visitors are requested to report at Bill Wines' QTH at 48 Crawley Street, Warrnambool.

All bookings must be sent to the organiser at the QTH given above.

#### NORTH EASTERN ZONE

Seems like I spoke too soon last month about antennae staying put. Latest news from the salt mines of Benalla is that antennae fell right and left at the QTHs of 2RR and 2DW. At 2KA's, nothing was left standing, not even the 50 ft. sticks holding up the 80 mhz antenna. However, Ken hopes to re-build with a tri-band quad this time and with the wind went visiting 3AGG and yours truly to see how quads are kept in the air during high winds. At the QTH of 3AGG he was suitably impressed with the construction, but with the QTH, I am not sure whether Ken was impressed or amazed that my quad withered the gales. Ken now has his W.A.S.

Keith 2DW also suffered damage to his quad but prompt repairs put him in business again. Hugh 2AHF just returned from the gold coast

with a new auto, now that just doesn't appear right. Hugh usually goes to the gold coast with a new auto and usually has to pawn it to stay long enough to get the tax you have. Nothing from Jack 2PF or Bill 2JF, what about a line from them?

3ATL, our esteemed Secretary, joins the ranks of those with fallen antennae, but due to the deluge no longer has to "sucker" the watter to the bottom or you see "it is an ill wind that does not do some good." Johnny 3AGG playing around with tape decks so that he can have some of his 3 mhz. mobiles. 3AGG loves to leave his v.f.o. running all the time but I think Bruce will discontinue this practice after a JA called him on his frequency on 6 metres and Bruce did not hear him. Would have been his first JA on 6 mhz too. Along with Peter 2APF and Sid 2CI, Bruce is contemplating operation on 250 Mc.

George 3GD has had a visit from the R.I. over V.L.I., however after checking George's RFI thoroughly for harmonic radiation, George has a clean bill of health, so the moral is fellows, proof your rig to the best of your ability and if the radiation from your harmonics is below a certain point you are in the clear. How to do it? It bows the curtain point is your business.

The Annual Zone Convention will be held at the Auditorium at Shepparton 2BR (by courtesy of the manager, Murray 3HZ) on Sunday, November 5. Keep this day free, roll up and let's hear your wings; a good time can be had by all. Edition of others including that of some correspondent. Attend so that you are able to defend yourself in person because the odds are against you. What you may end up being for the next 12 months.

### QUEENSLAND TOWNSVILLE

The boys certainly rolled up in full force at the last meeting on 27th August although a few of the old timers were still conspicuous by their absence. It was pleasing to note a few visitors, namely Vern 4LK from Charters Towers and Basil 4ZW from Cairns, also associates from Atherton. Main topics of discussion being the formation of classes for A.O.C.P., which will get under way next week at the residences of 4PF, Frank being one of the lecturers and the members are lucky to have access to his gear. It is to be hoped all

### W.I.A. N.S.W. DIVISION SOUTH WESTERN ZONE

Seventh Annual

## CONVENTION

at NARRANDERA

3rd, 4th, 5th OCTOBER, 1959

Location: Postal Institute Hall  
Bolton Street, Narrandera

A good programme of events is being drawn up including a Scramble on 5 and 8-6 metres. Good prizes for all prizes. Also good prizes will be awarded to the boys who attend the most contacts with those at the Convention.

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**MAXWELL HOWDEN**  
15 CLAREMONT CRES.,  
CANTERBURY, E.7,  
VICTORIA



who come along will stay the course and get their tickets. Claude 4UX is to start classes at Ayr and has nine members to start with next month. This augurs well for our Centenary Year in Queensland. If this good work keeps up next year the north will come into its own and may be a new far northern branch of the W.I.A. can be formed.

Another important matter was raised by 4RW and 4ZBE, namely the placing of a station in the Trades and Industries Fair which was to have been held from 17th to 18th May. Although time was short, it was decided that T.A.R.C. apply for a call sign to use on that occasion. A number of members loaned their rigs, etc., for the occasion, which is hoped will become a yearly event.

The Chairman, Allan 4PS, advised the meeting he had circulated all Amateurs from

Sarinas in the south to Arthur 4VE in Normanston in the north to Owen 4OV in Mt. Isa in the west, giving them an invitation to be present at a Contest of the T.A.C. to be held on the 3rd and 4th October when various matters affecting the Amateurs will be discussed. He also drew up an imposing list of various places to visit and locations, which he held out to children who may accompany the OM. Accommodation will be found with the local boys. He hopes a good roll up will be made and on that occasion the success which it deserves. This will be the place to air all your grievances and see what a collective effort will bring forth.

Frank 4ZM bewails the fact that only a few call in on Sunday. "I" or "L" 30 m. Sunday and hopes to hear more and will even pass on your grouches although not on Council himself. If you don't call in and grouch, it is assumed you are in accord with the way the Division is run. Remember a branch which has no opposition voices is a decadent one. Arguments keep the officials on their toes.

Hex 4LR has returned to Brisbane after the mid-winter recess, sports a single seater coupe and plans to go mobile. Mike 4OM visited my shack just as I was heading through to KHM on 2. Mc opened on 18th August and was suitably impressed, I hope. Owen 4OV back from his trip to Darwin, working mobile each way and is now fully conversant with the use of the Radio for future holidays. Believe it or not, but Arthur 4FE is going in for gardening and beautifying the department edifices in Normanston. Does he miss the swaying palm trees and dusky maidens of Thursday Island? The sore throat that Allan 4PS developed in the R.D. Contest turned into a hoarse croak and he told him up for the week. Even so, he enjoyed the Contest.

Basil 4ZM and Affen on "Walkabout" visited Sassa, Mackay, Horns Hill, Ayr, Charters Towers and local boys in their travels. Can vouch with Harry 4ZD that they are good fellows but better at watching the dishes (XLY Zee to note!) John 4DD says from the list: what is the germ of a.s.b. that did it? Charlie 4BQ almost finished his tower and hopes to erect it very soon. Ted 4EZ now has 100 lbs and pounds the brass; had heard of the voice tests for the t.v. shows and is a non-starter. Allan 4BE waiting for 10 m. to open, also same time for 4CZ. Rex 4LEI is waiting patiently for the bright lights. Bob 4CR is off the air; electric light bulb getting too high during winter months. Doug 4ZBMS and 4ZBE are there for each opening to Hawaii on 50 Mc. Can hear the JAs calling the VKX boys on 50 Mc. Congrats to Mike 4OM and VKL upon the arrival of a brand new harmonic.

## SOUTH AUSTRALIA

The monthly general meeting of the VKS Division for August took the form of a display of members' gear, and for the first time since this display was first held each year, I regret to say that the response was poor. Why it was poor, nobody could hazard a guess. It has always been a popular night, and up until this month the number of exhibits usually took two or three tables to display. I could bit notice that those who did not bother to display any more seemed to be getting up at its back, and can only assume that everybody left it to everybody else to do the right thing. Only one toward was made for the night due again to not enough entries, and this went to Barry 5ZBZ for an excellently constructed 6 m. mobile transmitter. Congrats and the award was well merited.

Nothing of great importance came up in general business, although there was a ballot for the disposals equipment. There was a suggestion for a W.I.C.E.N. Contest incorporating message handling. The Picnic was for discussion and it was decided to try and hold one in the autumn next year.

5ZX, who is now a member of this Division, passed the news from the VKS Division to the VKS Division, and as a grand finale Leth 5LG commented on a recent letter published in the magazine with reference to using the American phone band of 14 Mc. for the R.D. Contest, so with the 83 members present all talking at once, and with Leth more than holding his own, both in volume and clarity, a good time was had by all.

The meeting closed at the witching hour of 10.25 p.m., although I have it on good authority that at 11.25 p.m. Leth and the fire brigade just outside the meeting room were still arguing the point as to c.w. versus phone.

Ken 5BC headed on 40 discussing his recent visit to the Snowy Mountains and regions thereof. His graphical descriptions of what the VKS boys call highways made interesting listening, and should have attracted the attention of the wise men from the East no end. Huggle

5BC was also heard on 40 discussing a projected visit to the same area, probably in Sept. Apparently he expects to spend a portion of his holiday in the States and the fort over the border. Hope he makes the general meeting, I am tired of telling various visitors and locals that the famous, or is it infamous, h.f. specialist 5BC spends most of his time meeting.

Vec 5BZ bobbed up on 40 one Sunday morning recently, calling CQ. He did not stay long, but to the disgust of the VKS who called him local, he stayed and he did not stay. Cee... rumour had it that you had given it away. Gordon 5HM heard in contact with 4LH on 40, late on Saturday night, swapping R.D. Contest lists and plans and he did not stay. Two stalwarts dashed off their numbers had to be taken to be believed and when the diesel train line closed as it was, and the road was closed, I had to batten down everything within a hundred yards of my shack. What's that? It's a siren not a whistle. OK have it your way, what's a whistle between friends.

Brian 5CA, our worthy and respected President, is at the moment of writing travelling up and around the Flinders Ranges on his way to the R.D. Contest. He is the brother of the Wombi-Wombi tribe and conducts annual code exams for the local smoke signals club.

Ken 5BC's R.D. Contest was its usual success, and it is generally felt in VKS that the 15-minute silence, plus the opening address, starts this popular Contest on the right note. It is a considerable number of years now that I have not heard of any other Contest who dash into the R.D. melee with a contest number and yell and shout and enjoy themselves. This is as it should be and was the original idea behind the Contest before the competitive interest tended to cloud the real reason. The Long may continue to be the number one Contest in VK.

Heard in interview from the Best Broadcaster Station in VK for your benefit, 4ZD, abash! the other night with the Rev. Bob Guthrie (better remembered as 5OD of the Port Pirie Boys' Club). Bob had apparently just returned from a tour of duty in the land and was being interviewed at Broken Hill. Good to see you back Bob, and when you are domiciled please let me walk you on the air again. What about a talk to the local general meeting?

Jim 5JK has been heard occasionally on 40 with his big foolie, and which, as you well delivers a hefty signal, and my spies tell me that he has almost finished his new super-duper tx which is the one to end all tx building (oh dearh!). Col 5XV has been about a trip to Wilpena Pound and will be armed with a 121 for the purpose of maintaining contact while civilisation has been placed in the community (Type 3 but the previously mentioned blood brother of the Wombi-Wombi tribe beat him to the post).

Ken 5BC has suggested in higher quarters that in an attempt to raise the standard of these Divisional notes (what do they mean by this?), I should introduce a technical topic now and then. The trouble with me technically is that I find it extremely hard to come down to the level of the peasants who are too foolish to understand the difference between a wife and eighteen children to support, who am I to quibble, or should be quibble. Well now let me see, perhaps a little on the subject of vacuum tubes for the gentle reader, that if you connect the h.t. supply to the filaments of a valve, several interesting things will happen. What about the vacuum? You are? Well what is the use of me going all technical!

John 5JC, our illustrious Secretary, has now vacated his position of W.I.C.E.N. Co-ordinator, so it would appear that the gnomes in the sky wire have departed. Why not announce a periodical to our members, owing to magpies on the line you are having trouble with the transmission. It's marvelous just what sins that statement can cover in certain circles connected with radio. I speak with authority, John.

John 5DJ heard the other evening mobile on 40 with his mobile 4 watts. Graham 5KV has been going on 40 for some time these afternoons and looks like becoming a convert from 40 to this band. I rang his father, 5KU, the other night and he was having conversation on the phone I had the dubious privilege of listening to 5KV in contact with another station somewhere or other. Mow the front that at 11.25 p.m. Leth and the fire brigade just outside the meeting room were still arguing the point as to c.w. versus phone.

Nobby 5WK has been heard at odd intervals with his relay in the Snowy Mountains was a visitor to the city of churches this month, down for a chat with his favourite medium, I had the pleasure of a short chat with him, and he should have attracted the attention of the wise men from any other band but 14 Mc.,

## VICTORIAN DIVISION W.I.A.

### ANNUAL STATE CONVENTION

at STAWELL

SATURDAY AND SUNDAY,

3rd and 4th OCTOBER, 1959

This coincides with the Flower Show at Halls Gap and opportunity will be given for interested members to visit this show.

Further information re programme, etc., will be found in Divisional notes in this issue.

Contact Bill Kinsella, JAKW, re accommodation; forward to him £1 deposit.

## NORTH EAST ZONE VIC. W.I.A.

### CONVENTION

will be held at

SHEPPARTON

on

SUNDAY, 8th NOVEMBER

The meeting will be held in the Auditorium as last year commencing at 10 a.m.

A visit has been arranged to the Local Broadcast Station and various other items of interest are being teed up.

It is hoped that again we shall see a good roll up of metropolitan members and a big welcome will be extended to all.

## W.I.A. VICTORIAN DIVISION

### SOUTH WESTERN ZONE

### CONVENTION

will be held on

SATURDAY AND SUNDAY,

31st OCT. and 1st NOV., '59

at

WARRNAMBOOL

For all inquiries and required accommodation, contact—

Bill Wines,  
48 Crawley St., Warrnambool,  
no later than 1st October.

Amateur Radio, October, 1959



## TRANSISTOR FUNDAM

### MEMO

FROM: J. Martin, Factory Manager  
TO: W. Hope, Chief Engineer  
SUBJECT: Transistor Fundamentals  
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*J.M.*

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